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(56) Documents Cited  
WO 94/26054 A1 WO 93/01664 A1 US 4426733 A

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(54) Abstract Title  
**Voice-controlled Hands-free Portable Telephone**

(57) A portable phone system includes a portable phone receiver and transmitter and an acoustic driving circuit coupled to a CPU. An acoustic processor is coupled to the acoustic driving circuit for processing input voice signals, along with a microphone and a speaker. A receiver and transmitter is coupled to the acoustic processor, and a headset unit comprising a microphone and an earphone may exchange voice signals with this receiver and transmitter to allow a user to use the portable phone system in a hands-free mode.

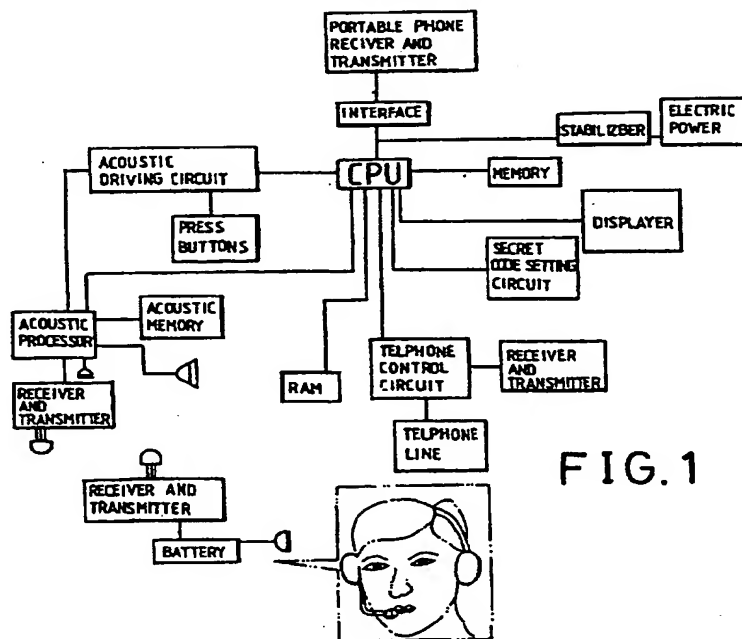


FIG. 1

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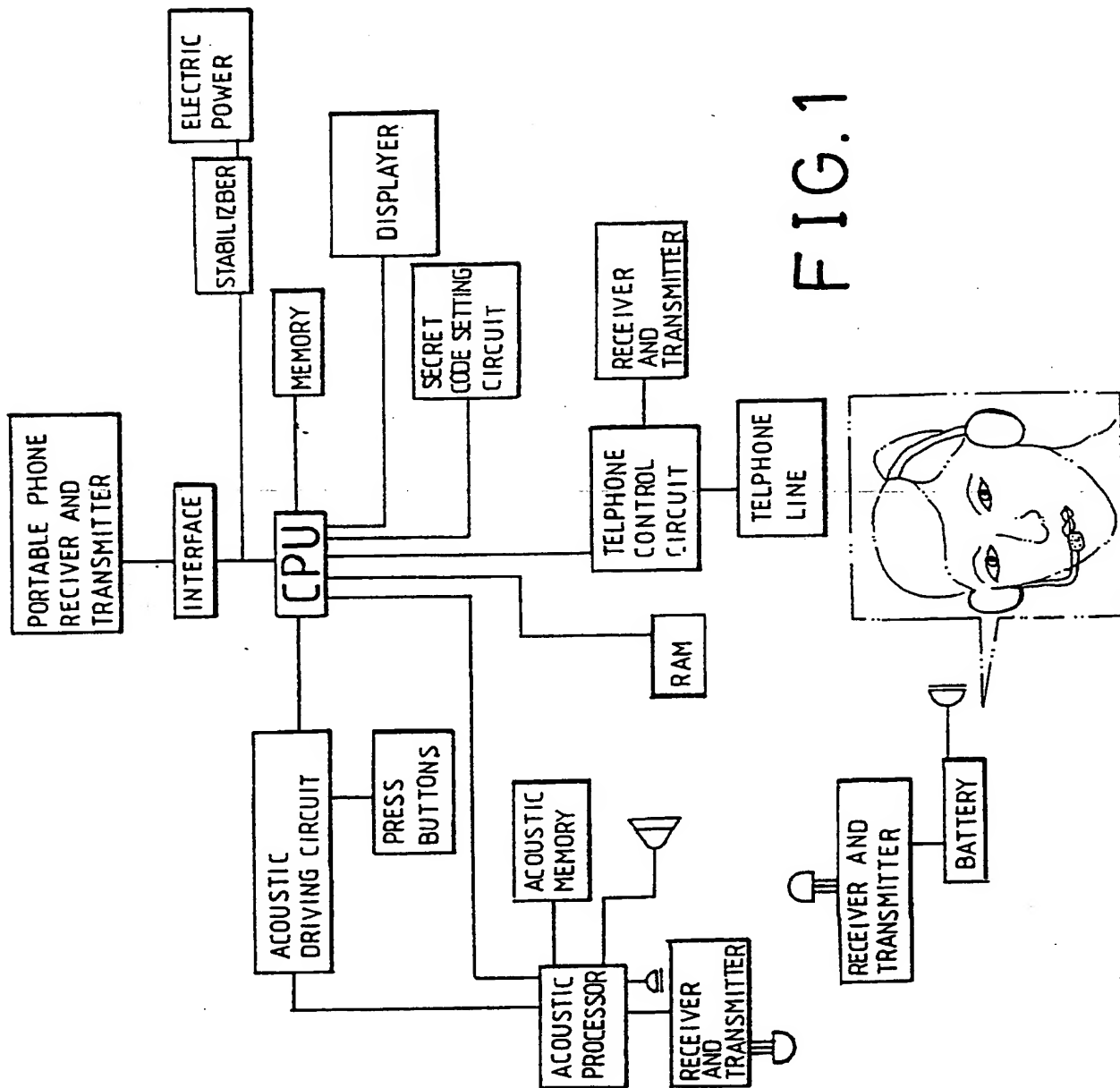


FIG. 1

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# PORTABLE PHONE ACOUSTIC CONTROL SYSTEM

The invention relates to a portable phone acoustic control system.

Typical portable phone systems have been widely  
05 used and have to be controlled by a number of switch  
buttons. The user have to depress the switch buttons  
for controlling the phone system and have to hold the  
handset. However, it is dangerous while the user is  
driving. Many accidents occur when the user uses  
10 portable phone.

It is accordingly an object of the present  
invention to provide a portable phone that may be  
operated without depressing any button and without  
holding the handset.

15 According to the present invention there is  
provided a portable phone system comprising:

a central processing unit (CPU),

a portable phone receiver and transmitter coupled  
to said central processing unit,

20 an acoustic driving circuit coupled to said CPU,

an acoustic processor coupled to said acoustic  
driving circuit for processing inlet voice,

a first microphone and a speaker coupled to said  
acoustic processor for input and output voice,

25 a first receiver and transmitter coupled to said  
acoustic processor for input and output voice,

a second receiver and transmitter, and

a second microphone and an earphone coupled to said second receiver and transmitter for transmitting and receiving a voice to said first receiver and transmitter via said second receiver and transmitter  
05 and for allowing user to use said portable phone system without using his hand.

An acoustic memory may be coupled to said acoustic processor for storing user's voice and for preventing unauthorized person from using said phone system.

10 At least one button is coupled to said acoustic driving circuit for switching between said first receiver and transmitter and said speaker.

An acoustic random access memory is coupled to said CPU for storing instructions.

15 A telephone control circuit is coupled to said CPU for coupling said CPU to a telephone line, and a third receiver and transmitter coupled to said CPU for receiving and transmitting a call.

20 A memory may store phone numbers and may allow said phone system to dial selected phone number.

A secret code setting circuit may be coupled to said CPU for allowing the user to enter secret code and for preventing unauthorized person from using said phone system.

25 In the drawing:

FIG. 1 is a block diagram of a portable phone acoustic control system.

As shown in the drawing, a portable phone system comprises a central processing unit (CPU) 10, and a portable phone receiver and transmitter (handset) 12 is coupled to the CPU 10 via an interface 11 which is  
05 coupled to a direct current or alternate current electric power supply 15 or to the electric system of the vehicle via a stabilizer 14. Two memories 16, 17, such as acoustic random access memories (RAM), and a displayer 19 and a secret code setting circuit 19 are  
10 coupled to the CPU 10. The memory 16 may store phone numbers for allowing the phone system to dial stored phone numbers. The memory 17 may store acoustic instructions, such as "dial number ...", "switch to earphone", etc. The displayer 18 may show the status  
15 and/or instructions and/or phone numbers etc. The secret code may be entered into the CPU via the setting circuit 19 for preventing unauthorized person from using the phone system. A telephone control circuit 20 may couple the CPU 10 to the family telephone line 21  
20 and/or to the receiver and transmitter 22, such as beeper, recorder etc.

An acoustic processor 31 is coupled to the CPU 10 via an acoustic driving circuit 30 for processing inlet voice. A receiver and transmitter 32 and a microphone  
25 33 and a speaker 34 are coupled to the acoustic processor 31 for receiving and/or transmitting voices. One or more press buttons 36 may switch between the

receiver and transmitter 32 and the microphone 33 and the speaker 34. An acoustic memory 35 may store the voices of the users and is coupled to the acoustic processor 31 for recognizing the voices of the users  
05 and for preventing unauthorized person to use the phone system. Another microphone 38 is coupled to another receiver and transmitter 37 which may transmit a sound or voice to the receiver and transmitter 32 and which includes an earphone 39 for allowing the user to use  
10 the phone system without using his hands. The user may also control the phone system via the microphone 33 directly. The voice may be output via the speaker 34 or to the earphone 39 via the receiver and transmitter 37, 32. When the output voice may not be heard by the  
15 others, the user may switch to the earphone 39 for allowing only the user to hear the sound. The receiver and transmitter 37 may be energized by battery 40.

In operation, when the user is speaking, the acoustic processor 31 may identify the voice by  
20 comparing that stored in the acoustic memory 35 and may couple to the CPU 10 for storing phone numbers in the memory 16, for storing acoustic instructions in the memory 17, for setting secret code 19 and for receiving the telephone line 21, or for transferring the  
25 telephone line to another receiver and transmitter 22, such as beeper or recorder. The user may use his voice to couple the phone line to the speaker 34 or the

earphone 39 and to receive the call and to dial the  
pre-stored phone numbers and to control the phone  
system by the instructions stored in the memory 17. The  
most important thing is that the user may control the  
05 phone system via the microphones 33, 38 without using  
the handset 12, such that the user may concentrate on  
driving and such that accidents may be greatly  
decreased. The acoustic processor 31 may recognize the  
users' voices. In addition, the entered secret code  
10 (19) may prevent the other people from using the phone.

CLAIMS:-

1. A portable phone system comprising:
  - a central processing unit (CPU),
  - a portable phone receiver and transmitter coupled
  - 05 to said central processing unit,
  - an acoustic driving circuit coupled to said CPU,
  - an acoustic processor coupled to said acoustic driving circuit for processing inlet voice,
  - a first microphone and a speaker coupled to said
  - 10 acoustic processor for input and output voice,
  - a first receiver and transmitter coupled to said acoustic processor for input and output voice,
  - a second receiver and transmitter, and
  - a second microphone and an earphone coupled to
  - 15 said second receiver and transmitter for transmitting and receiving a voice to said first receiver and transmitter via said second receiver and transmitter and for allowing user to use said portable phone system without using his hand.
- 20 2. A portable phone system as claimed in claim 1 further comprising an acoustic memory coupled to said acoustic processor for storing user's voice and for preventing unauthorized person from using said phone system.
- 25 3. A portable phone system as claimed in claim 1 further comprising at least one button coupled to said acoustic driving circuit for switching between said



first receiver and transmitter and said speaker.

4. A portable phone system as claimed in claim 1 further comprising an acoustic random access memory coupled to said CPU for storing instructions.

05        5. A portable phone system as claimed in claim 1 further comprising a telephone control circuit coupled to said CPU for coupling said CPU to a telephone line, and a third receiver and transmitter coupled to said CPU for receiving and transmitting a call.

10        6. A portable phone system as claimed in claim 1 further comprising a memory for storing phone numbers and for allowing said phone system to dial selected phone number.

15        7. A portable phone system as claimed in claim 1 further comprising a secret code setting circuit coupled to said CPU for allowing the user to enter secret code and for preventing unauthorized person from using said phone system.

20        8. A portable phone system substantially as herein described with reference to the accompanying drawing.



Application No: GB 9702573.8  
Claims searched: all

Examiner: Nigel Hall  
Date of search: 29 April 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.O): H4L (LECX)  
Int CI (Ed.6): H04M 1/27, 1/60; H04B 1/46  
Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
Y	WO 94/26054 A1 (SOUTHWESTERN BELL)	1 at least
X,Y	WO 93/01664 A1 (MOTOROLA)	1 at least
Y	US 4426733 (BRENIG)	1 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.